

**BARCLAYS OFFICIAL CALIFORNIA CODE
OF REGULATIONS
TITLE 13. MOTOR VEHICLES
DIVISION 3. AIR RESOURCES BOARD
CHAPTER 1. MOTOR VEHICLE POLLUTION
CONTROL DEVICES
ARTICLE 1. GENERAL PROVISIONS**

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s 1961.1. Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2009 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

(a)Greenhouse Gas Emission Requirements.The greenhouse gas emission levels from new 2009 and subsequent model year passenger cars, light-duty trucks, and medium-duty passenger vehicles shall not exceed the following requirements. Light-duty trucks from 3751 lbs. LVW - 8500 lbs. GVW that are certified to the Option 1 LEV II NOx Standard in section 1961(a)(1) are exempt from these greenhouse

gas emission requirements, however, passenger cars, light-duty trucks 0-3750 lbs. LVW, and medium-duty passenger vehicles are not eligible for this exemption.

(1)Fleet Average Greenhouse Gas Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

(A) The fleet average greenhouse gas exhaust mass emission values from passenger cars, light-duty trucks, and medium-duty passenger vehicles that are produced and delivered for sale in California each model year by a large volume manufacturer shall not exceed:

**FLEET AVERAGE GREENHOUSE GAS
EXHAUST MASS EMISSION REQUIREMENTS
FOR PASSENGER
CAR, LIGHT-DUTY TRUCK, AND MEDIUM-
DUTY PASSENGER VEHICLE WEIGHT
CLASSES**

[\[FN1\]](#) (4,000 mile Durability Vehicle Basis)

Fleet Average Greenhouse Gas Emissions
(grams per mile CO₂ - equivalent

Model Year	All PCs; LDTs	
	LDTs 0-3750 lbs. LVW	3751 lbs. LVW - 8500 lbs. GVW; MDPVs
2009	323	439
2010	301	420
2011	267	390
2012	233	361
2013	227	355
2014	222	350
2015	213	341
2016+	205	332

[\[FN1\]](#) Each manufacturer shall demonstrate compliance with these values in accordance with section 1961.1(a)(1)(B).

(B)Calculation of Fleet Average Greenhouse Gas Value.

1.Basic Calculation.

a. Each manufacturer shall calculate both a "city" grams per mile average CO₂ -equivalent value for each GHG vehicle test group and a "highway" grams per mile average CO₂ -equivalent value for each GHG vehicle test group, including vehicles certified in accordance with

section 1960.5 and vehicles certified in accordance with section 1961(a)(14), using the following formula. Greenhouse Gas emissions used for the "city" CO₂ -equivalent value calculation shall be measured using the "FTP" test cycle (40 CFR, Part 86, Subpart B). Greenhouse Gas emissions used for the "highway" CO₂ -equivalent value calculation shall be based on emissions measured using the Highway Test Procedures.

CO₂-Equivalent Value = CO₂+ 296 x N₂O + 23 x CH₄-
A/C Direct Emissions Allowance - A/C Indirect
Emissions Allowance

A manufacturer may use $N_2O = 0.006$ grams per mile in lieu of measuring N_2O exhaust emissions.

b.A/C Direct Emissions Allowance.A manufacturer may use the following A/C Direct Emission Allowances, upon approval of the Executive Officer, if that manufacturer demonstrates that the following requirements are met. Such demonstration shall include specifications of the components used and an engineering evaluation that verifies the estimated lifetime emissions from the components and the system. A manufacturer shall also provide confirmation that the number of fittings and joints has been minimized and components have been optimized to minimize leakage. No A/C Direct Emissions Allowance is permitted if the following requirements are not met.

i. A "low-leak air conditioning system" shall be defined as one that meets all of the following criteria:

A. All pipe and hose connections are equipped with multiple o-rings, seal washers, or metal gaskets only (e.g., no single o-rings);

B. All hoses in contact with the refrigerant must be ultra-low permeability barrier or veneer hose on both the high-pressure and the low-pressure sides of the system (e.g., no rubber hoses); and

C. Only multiple-lip compressor shaft seals shall be used (with either compressor body o-rings or gaskets).

ii. For an air conditioning system that uses HFC-134a as

the refrigerant:

A. An A/C Direct Emissions Allowance of 3.0 CO_2 - equivalent grams per mile shall apply if the system meets the criteria for a "low-leak air conditioning system."

B. An A/C Direct Emissions Allowance of 3.0 CO_2 - equivalent grams per mile shall apply if the manufacturer demonstrates alternative technology that achieves equal or lower direct emissions than a "low-leak air conditioning system."

C. An A/C Direct Emissions Allowance greater than 3.0 CO_2 - equivalent grams per mile may apply for an air conditioning system that reduces refrigerant leakage further than would be obtained from a "low-leak air conditioning system." A maximum A/C Direct Emissions Allowance of 6.0 CO_2 - equivalent grams per mile may be earned for an air conditioning system that has 100 percent containment of refrigerant during "normal operation." To obtain an A/C Direct Emissions Allowance greater than 3.0 CO_2 -equivalent grams per mile, the manufacturer must provide an engineering evaluation that supports the allowance requested.

iii. For an air conditioning system that uses HFC-152a, CO_2 refrigerant, or any refrigerant with a GWP of 150 or less: An A/C Direct Emissions Allowance shall be calculated using the following formula:

$$\text{A/C Direct Emissions Allowance} = A - (B \times C)$$

where: A =

[Health and Safety Code section 43211](#) civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. For the purposes of [Health and Safety Code section 43211](#), the number of passenger cars and LDTs not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi Greenhouse Gas emission debits for the model year by the g/mi Greenhouse Gas fleet average requirement for PCs and LDTs 0-3750 lbs. LVW applicable for the model year in which the debits were first incurred. For the purposes of [Health and Safety Code section 43211](#), the number of LDT2s and MDPVs not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi Greenhouse Gas emission debits for

the model year by the g/mi Greenhouse Gas fleet average requirement for LDTs 3751 lbs. LVW - 8500 lbs. GVW and MDPVs applicable for the model year in which the debits were first incurred.

(B) Greenhouse Gas emission credits earned in the 2000 through 2008 model years shall be treated as if they were earned in the 2011 model year and shall retain full value through the 2012 model year. Greenhouse Gas emission credits earned in the 2009 and subsequent model years shall retain full value through the fifth model year after they are earned. The value of any credits earned in the 2000 through 2008 model years that are not used to equalize debits accrued in the 2009 through 2012 model years shall be discounted by 50% at the beginning of the 2013 model year, shall be discounted to 25% of its original value if not used by the beginning of the 2014 model year, and will have no value if not used by the

beginning of the 2015 model year. Any credits earned in the 2009 and subsequent model years that are not used by the end of the fifth model year after they are accrued shall be discounted by 50% at the beginning of the sixth model year after being earned, shall be discounted to 25% of its original value if not used by the beginning of the seventh model year after being earned, and will have no value if not used by the beginning of the eighth model year after being earned.

(c)Test Procedures.The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in section 1961(d). In the case of hybrid electric vehicles and on-board fuel-fired heaters, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the "California Exhaust Emission Standards and Test Procedures for 2005 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.

(d)Abbreviations.The following abbreviations are used in this section 1961.1:

"cc" mean cubic centimeters.

"CH₄" means methane.

"CO₂" means carbon dioxide.

"E85" means a blend of 85 percent ethanol and 15 percent gasoline.

"FTP" means Federal Test Procedure.

"GHG" means greenhouse gas.

"g/mi" means grams per mile.

"GVW" means gross vehicle weight.

"GVWR" means gross vehicle weight rating.

"GWP" means the global warming potential.

"HEV" means hybrid-electric vehicle.

"LDT" means light-duty truck.

"LDT1" means a light-duty truck with a loaded vehicle weight of 0-3750 pounds.

"LDT2" means a "LEV II" light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds.

"LEV" means low-emission vehicle.

"LPG" means liquefied petroleum gas.

"LVW" means loaded vehicle weight.

"MDPV" means medium-duty passenger vehicle.

"MDV" means medium-duty vehicle.

"mg/mi" means milligrams per mile.

"N₂O" means nitrous oxide.

"PC" means passenger car.

"SULEV" means super-ultra-low-emission vehicle.

"ULEV" means ultra-low-emission vehicle.

"ZEV" means zero-emission vehicle.

(e)Definitions Specific to this Section.The following definitions apply to this section 1961.1:

(1) "A/C Direct Emissions" means any refrigerant released from a motor vehicle's air conditioning system.

(2) "A/C Indirect Emissions" means any increase in motor vehicle exhaust CO₂ emissions that can be attributed to the operation of the air conditioning system.

(3) "GHG Vehicle Test Group" means vehicles that have an identical test group, vehicle make and model, transmission class and driveline, aspiration method (e.g., naturally aspirated, turbocharged), camshaft configuration, valvetrain configuration, and inertia weight class.

(4) "Greenhouse Gas" means the following gases: carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons.

(5) "Grid-Connected Hybrid Electric Vehicle" means a hybrid electric vehicle that has the capacity for the battery to be recharged from an off-board source of electricity and has some all-electric range.

(6) "GWP" means the 100-year global warming potential specified in IPCC (Intergovernmental Panel on Climate Change) 2000: Emissions Scenarios. N. Nakicenovic et. al. editors, Special Report of Working Group III of the IPCC, Cambridge University Press, Cambridge UK, ISBN 0-521-80493-0.

(7) "Normal Operation" of an air conditioning system means typical everyday use of the A/C system to cool a vehicle. "Normal Operation" does not include car accidents, dismantling of an air conditioning system, or any other non-typical events.

(8) "Optional GHG Test Vehicle Configuration" means any GHG vehicle configuration that is selected for testing by the manufacturer as allowed by section G.2.3 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," other than the worst-case configuration.

(9) "Renewable Energy Resource" means a facility that meets all of the criteria set forth in [Public Resources Code section 25741\(a\)](#), except that the facility is not required to be located in California or near the border of California.

(10) "Variable Displacement Compressor" means a compressor in which the mass flow rate of refrigerant is adjusted independently of compressor speed by the control system in response to cooling load demand.

(11) "Variable Speed Compressor" means a compressor

in which the mass flow rate of refrigerant can be adjusted by control of the compressor input shaft speed, independent of vehicle engine speed. For example, a variable speed compressor can have electric drive, hydraulic drive, or mechanical drive through a variable speed transmission.

(12) "Worst-Case" means the vehicle configuration within each test group that is expected to have the highest CO₂-equivalent value, as calculated in section 1961.1(a)(1)(B)1.

(f) Severability. Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of this article remains in full force and effect.

(g) Effective Date of this Section. The requirements of this section 1961.1 shall become effective on January 1, 2006.

<General Materials (GM) - References, Annotations, or Tables>

Note: Authority cited: [Sections 39500, 39600, 39601, 43013, 43018, 43018.5, 43101, 43104 and 43105, Health and Safety Code](#). Reference: [Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43018.5, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204, 43205 and 43211, Health and Safety Code](#).

HISTORY

1. New section filed 9-15-2005; operative 1-1-2006 (Register 2005, No. 37).
13 CA ADC s 1961.1
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